

THE INFLUENCE OF STRUCTURE AND MIS-STRUCTURED
LEARNING EXPERIENCES ON EMOTIONALLY DISTURBED AND MORAL
DISORDERED ACQUISITION OF ECONOMIC BEHAVIOR

By

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THE INFLUENCE OF STRUCTURED AND NON-STRUCTURED LEARNING
CONDITIONS ON EMOTIONALLY DISTURBED AND NORMAL
STUDENTS' ACQUISITION OF ACADEMIC SKILLS

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The purpose of the study was to measure the effects of two learning conditions, structured and non-structured, on emotionally disturbed and normal students' acquisition of two specific academic behaviors: (I) acquisition of a reading vocabulary and (II) measurement of attentional work time. The sample consisted of twelve emotionally disturbed students, ages seven years, four months, to eleven years, three months, who were enrolled in a public self-contained facility for emotionally disturbed students and twelve normal students, ages seven years, five months, to eleven years, two months, enrolled in a regular public school. Each emotionally disturbed subject was randomly assigned to one of two groups. Each normal student was matched for age, intelligence, and race with each emotionally disturbed student and assigned to corresponding groups.

The groups participated in two six session treatments for a total period of twelve sessions. Group M₁ (six emotionally disturbed students) and M₂ (six normal students) were exposed to Condition A (structured) in the first treatment of the study and to Condition B (unstructured) in the second treatment. The random order was employed for students in Groups M₁ (six emotionally disturbed students) and M₂ (six normal students). A Split Plot Factorial was used to accommodate the data which was programmed into a Statistical Computer Program for complete analysis of variance. Thirty null hypotheses were tested. Nineteen hypotheses were confirmed. Of the remaining eleven null hypotheses, 4 were found to be significant at the .05 level while the remaining 7 were significant at the .05 level.

It was concluded that emotionally disturbed students learned significantly fewer vocabulary words and accumulated less attentional work time than the normal students. The total number of words learned by the emotionally disturbed students decreased on subsequent days of presentation whereas for the normal students the number of words increased regardless of treatment. Emotionally disturbed students learned more words and accrued more attentional work time in the structured condition. Normal students accrued almost identical levels of attentional work time in both conditions but, increased in words learned in the normal treatment regardless of the structured or non-structured condition.

CHAPTER I THE TEACHER

The education and treatment of emotionally disturbed children was for many years left to the whim of the psychology and medical professions... Recent federal support programs, mandatory legislation, compulsory attendance laws, and a growing concern for the emotionally disturbed child has shifted the major responsibility for this segment of school-age population to the public schools (Gallagher, Levine, Morrison, Stone, & Levine, 1973). Many of these children are unprepared to meet the demands of school life and often exhibit distorted social and/or academic behaviors. Therefore appropriate educational programs designed to meet individual academic and social needs are imperative if the conservation of human resources is to be secured.

As long as it is difficult to subject to research the child who enters repeatedly when attempting to describe educational programs for emotionally disturbed children because the degree of participation varies structure in the classroom (Morrison & Stone, 1973) the issue basically involves the degree of child-determined as compared with teacher-determined factors operating in the educational program.

Stone, Taylor, and Rich (1961) reported a broad range of intervention approaches. The interventions described could be placed on

a continuum from permissiveness to structured. McCall (1968) described a permissive approach which included a child-centered classroom designed to accommodate both disturbed and normal children in which teachers would stick to his or stated and routine behavior that is in line of the classroom depending on their personal desires. Another proponent of the permissive approach is Reinhardt (1981) who emphasizes freedom of individual exploration in science and development rather than specific academic skills. The structure of academic learning was left up to the individual.

The structured classroom approach with its traditionally described has been discussed by Criswellbank, Bentzen, Reinhardt, and Weinbaum (1982), Gallagher (1983), Halsey and Phillips (1982), Rubin, Flapan, and Cohen (1984) and Stevens and Leshner (1987). The structured approach emphasizes consistency of classroom routines, the establishment of limits and systematic follow-through for all expectations. The philosophical rationale of this approach is founded upon behavioral principles.

The behavioral principles emphasize rewards and a broad range of reinforcing outcomes. There are of special importance in teaching students who may need more structure or defined limits. The target school population who would benefit from the application of these principles would include children with (a) learning problems (Gallagher 1983; Reinhardt, 1983); (b) emotional disturbances (Halsey & Phillips, 1982; O'Leary & Leshner, 1987); and (c) academic deprivation (Halsey & Earl, 1984). The translation of behavioral principles into positive classroom experiences for students needs further documentation through research.

and assess children's acquisition of two specific academic behaviors: (a) acquisition of a reading vocabulary and (b) assessment of attentional work time.

CHAPTER II REVIEW OF THE LITERATURE

A characteristic of students in a typical classroom is the wide variability in their abilities and behaviors (Korvick, 1971; Forman, Olson, and Birch, 1974). These data indicate how individual "styles of functioning" which persist from birth throughout their development. Poplar (1974) refers to the teacher's style as playing an important part in the student's development.

Teaching a group of students who differ markedly in achievement, motivation, cultural and experiential background, physical, intellectual, and social maturity, approaches an overwhelming responsibility. Every teacher is faced with the tasks of classroom management and instruction but students who present social learning and behavior problems increase the difficulty of this task (Korvick, 1971; McCarty & Farnsworth, 1976; Farnsworth & McCarty, 1976).

Different pedagogical approaches and motivational procedures are needed for students with diverse needs. Bellamy (1964) suggested that many standardized procedures for schools will have to be abandoned and that each new situation will have to be given its priority in such school the unique mix of persons, facilities, materials, and activities that is most effective for that situation.

A review of the literature was undertaken from two points of

view (a) a closer look at the learning styles of students and (b) an in-depth examination of contemporary and traditional strategies employed in the education of emotionally disturbed students.

Learning Styles of Children

In the WHO's open space schools began to appear throughout the United States (Kruglik, 1988). Open education is based primarily on Piaget's theory as to how children learn and on recent child development research (Wais, 1976). Individual learning styles of students must be considered when designing an educational approach. Piast (1981) suggested that processes are at work during the interaction of the individual with the environment, that is as new information is assimilated from the environment the individual accommodates it.

Children learn over varying periods of time as a result of repeated encounters with concrete experiences and exchanging points of view with others. The direct experiences form a social system of the world which leads to a formation of a hierarchy of meanings for the individual (Pfeifferstein, 1987). The majority of young children, according to Piaget, grasp abstract concepts much more slowly than adults realize. The pattern of abstract thought used in mathematics (for example, must be built on layers of direct experience: counting, hearing, smiling, and touching).

Piast (1981) stated that the thinking and creative skills of pupils are developed by the gathering of extensive, relevant, concrete information from which abstractions and generalizations are

ness. During the information-gathering stage, the teaching style will need to be directly instructive; a shift to individualism becomes necessary as pupils engage in a higher level of thinking processes.

The child as an active, self-organizing system continually generating information acquired by his interaction with his environment has been projected by Gagne (1964). Children, according to North (1971), are learning systems and this behavior is self-perpetuating. Essential learning elements for children suggested by North include self-confidence and involvement in a rich, challenge-free environment, the right to select individual learning routes, and to make significant decisions. Social learning includes choice of collaboration and expression of experience with others.

Verticalization are upper subdivisions for experience (Gagne, 1962). Verticalization takes place only after a person has an encounter with the environment. Children learn to master concepts in a variety of ways; therefore individual learning styles are as important in the determination of instructional methodology as are the definition of goals.

The point of view that children must have opportunities for choice if they are to take appropriate responsibility for what they learn was expressed by Shaw (1964). When children learn becomes primarily the responsibility of the individual. "Learning is as natural as breathing. For each child is born with the urge to investigate and find out" (Brockman, 1965).

Traditional Approaches to the Education of Emotionally Disturbed Children

The traditional approaches have been influenced by Freudian psychoanalytic theory (Klithorn, 1945; Ginzburg, 1950; Newman, 1955; Frost, 1957; Klein, 1960). Operationally, high priority is given to accepting the child as he is without concern and to developing a positive, trusting relationship before formal education training is attempted. The approach is concerned with (a) the meaning of the disturbed behavior and depressed intellectual functions during critical periods of personality development and (b) emotional problems originating in the individual's historical past. Treatment based on psychotherapy extends over a long period of time, ranging from a few months to many years.

Klithorn (1945) advocated total acceptance of disturbed behavior and emotional understanding as an attempt to attack the rigid and punitive approach to managing children which was prevalent in many residential institutions during the 1930's. Klithorn's permissive approach resulted in many association and destructive acts, but these reportedly diminished over time.

Ginzburg (1950, 1957) discussed the treatment program utilized in a residential center for severely disturbed children which emphasizes a psychoanalytic orientation. This approach stresses a permissive atmosphere designed to provide children with the conviction that the world is a pleasant place in which to live and where social interaction can be experienced. Academic knowledge is secondary to the primary goal of meeting the emotional needs of disturbed children.

Classical teaching which combines education with the treatment plan was advocated by Bellman (1976). His discipline may be seen as punishment. Controlled control must be abandoned into an effective process. The teacher works with the disturbed individual focusing attention on correct behaviors. These behaviors, regardless of their insignificance, must be considered as a means of communication. The teacher's role is one of understanding what the individual is really trying to say by the overt behavior. Suggestions for alternative behavioral responses which the student can use to generalize in the future is important.

Bell and Winters (1980) implemented the life-space interaction technique as an effort to help the child cope more effectively with his environment. The technique helps the child gain insight from his interaction with the environment. In essence, there are two broad goals of the life space interaction (a) facilitate "on-the-spot" intervention and (b) critical exploration of the event (Bell, 1980). At times, the purpose of the interview may be to assist the individual in secondary difficulties and restore to normal functioning. In other situations, the teacher may attempt to work through some intrapsychic goals with the child. In contrast to counseling and psychotherapy, which generally takes place in the interview room, life-space interaction occurs in the more natural context of the child's daily environment.

A milieu treatment concept designed to accept emotionally disturbed children in a round-the-clock program has been reported by Bell (1971) and Bell and Winters (1977). The basic premise for

sition therapy was made on the belief that emotionally disturbed children need more than a few hours weekly of individual or group therapy. Children need to have every aspect of their lives designed so that new positive behaviors could be consolidated and negative behaviors be altered.

Most of the traditional approaches strive to promote self-expression and inner-directed activities. Rogers (1942, 1951) expressed that a completely permissive relationship is necessary to promote self-expression and therefore considered the public school too restrictive to provide an adequate setting for therapy. The ideas that permissiveness, understanding, acceptance, and acceptance and clarification of feelings promote the emotional growth of the child are fundamental to traditional intervention approaches (Barkham, 1981; Bergin, 1980; & Elliot, 1960). The major problem, however, with accepting all behavior of a disturbed child is based on building a permissive relationship in that it fails to provide opportunities for the child to learn to discriminate between appropriate and inappropriate behavior (Skinner, 1968a). Fennell (1980) encourages permissiveness on the part of the teacher but states that disturbed children need someone to regulate the world for them.

Contemporary Approaches to the Education of Emotionally Disturbed Children

The structured approach is represented in the literature as for behavior modification (Barkham, 1981; Gray, 1980; Kirsch, Fennell, & Gray, 1980; Skinner, 1968a; 1968b) or structured teaching (Barkham & Kirsch, 1981; Kirsch, 1980), for educational engineering (Barkham, 1981,

1961), and GE structured classroom (Gallagher, 1966, 1970, 1972; Boring & Phillips, 1961; Berlin, 1973). In contrast to behavior of the child which is observable, current, and can be measured. Emphasis is on what the individual is *ready to learn* and *how to teach* *why* rather than *why to* *how* problem in the first place. Ethological aspects of behavior are studied.

The principles of work before play, anticipated rewards for good behavior, consistency, firmness, and fairness are minimum requirements for good teaching when utilizing the structured approach. When these underlying principles of behavior management are employed systematically, a high degree of "structure" is introduced into the classroom. This structure or predictability of the classroom environment has been found to have a therapeutic effect on children's social-emotional and academic behavior (Griffiths, Boston, Johnson, & Tuckman, 1961; Berlin & Phillips, 1961; Phillips, 1971; Phillips, Wiener, & Berlin, 1968; Berlin, 1966).

Behavior modification is intended to displace behavior when a specific procedure is followed designed to achieve a behavioral change (Pillars & Linn, 1965). Reinforcement of the environmental events which reinforce and support the behavior constitutes an important aspect of the behavioral change program. With the reinforcing conditions accurately identified, the behavior modifier can effectively manipulate the environment to bring about change.

Originally, the reinforcers used by behavior modifiers consisted of foods (Berlin & Lindsey, 1946; Bellows, 1946). Unfortunately, such primary reinforcers soon lose their effectiveness.

to reduce the influence of variables, behavior modification subject/teacher ratios, reinforcements (Skinner & Smith, 1969; Patterson, 1969; Smith & Swann, 1969)...

The use of operant conditioning techniques for teaching speech and academic skills to individual autistic children has been reported as effective by a number of investigators (Skinner, 1969, 1969; Lovaas, 1969; Folger & Schaeffer, 1969). Selection of a discrete target behavior, presentation of a stimulus to elicit the behavior, setting of an expectation or contingency which must be met, and provision of a positive reinforcement according to the contingency are the key elements of such projects. The child's behavior is then shaped toward more complex levels by gradually increasing expectations.

Less severely disturbed children with behavior and learning problems have also been helped to modify their own behavior in individual studies (Skinner, Wolf, & Barr, 1967; Folger, 1969; Patterson & Barr, 1969; Quay, 1969; Miller & Bailey, 1969; and Eisenman & Lovaas, 1969). Ross and Fernald (1969) applied behavior modification techniques to a total class of third and fourth grade pupils who were nonverbalistic. Each pupil had been referred one or more times during an observation period of two weeks. The teachers were also unable to keep the pupils in class. The classroom was divided into two small rooms. An attempt was made to establish material in use even through nonverbalizing and mobility. It was hypothesized that changes in behavior produced in one room would transfer to the other. Results indicated that the hypothesis was confirmed.

The Fernald Program (1969) and use of free activity as a reward

any intervention in modifying the maladaptive behavior of emotionally disturbed children is informed by Skinner (1968). During a period of free choice time in a high interest area with intraparty games and activities contingent on completion of a specific academic assignment, is based on the Premack Principle (1969) which states that behavior normally occurring at a low rate may increase in frequency when it is followed by activities which are highly desirable to the student; Goodfield (1970), Barker and Levin (1974), and Walker, Harrison, and Barkley (1985) have incorporated this principle in a particular teaching approach. This approach is based on the work of Goodfield (1970) and Levin (61) pinpointing a specific behavior; (2) recording the occurrence of this behavior daily and charting it on a graph; (3) recording changes in the teaching program; (4) analyzing the child's performance to determine the relationship between the program and the child's behavior; and (5) systematically changing the program variables and evaluating its effect on the child's performance.

Contingency contracting suggested by Baum (1965) and Baum and Noris (1971) falls into a category of a structured approach. The explicit Levinson is outlined between the teacher and pupil. The teacher defines the behavior or task which the child must perform. After deciding what will be reinforcing to the child, the teacher arranges a contract with the child, such that if the child performs the required task, a reinforcing activity will be made available. The system begins with extensive teacher observations which result in (a) the determination of the task and reinforcement; (2) presenting the contract to the student; and (3) delivering the contingency. During the transition stage, both the teacher and the student are involved in the determiner

sion of the task and reward. The student gradually assumes more responsibility until he can determine the task and the reward himself.

An engineered classroom design has been developed by Brown (1981) in which the emotionally disturbed child is viewed according to the levels of (a) attention, (b) response, (c) order, (d) expectancy, (e) reward, and (f) mastery. The long range goal of the engineered classroom was the development of a self-motivated individual whose reward is school and academic achievement. A built-in-pool was incorporated with each classroom task. The physical facilities of the room provided learning and activity areas designed to strengthen functioning on all levels.

Stinson and Leibman (1967) found that the use of a structured approach worked with brain-injured children particularly in reducing the environment. The classroom environment for the brain-injured child, as established by Stinson and Leibman, included these features: (a) a small class with a maximum of twelve pupils; (b) each child seated at a desk which is distant from the other children; (c) the presence of few pictures, murals, posters, books, and other traditional, stimulating classroom objects; (d) lower part of windows covered with light grids to diminish the intensity of light or fluorescent lights; (e) a classroom located away from school traffic; (f) teachers not wearing cosmetics or jewelry and (g) work tables facing the wall to control distractions. Graubard, Berman, Reissberg, and Fuchsman (1981) believe that the emotionally disturbed child can profit from the highly structured, planned routine in the classroom which has been successful with hyperactive and so-called brain-injured children.

Barney and Phillips (1965), Rubin, Sloman, and Breese (1965) and Wolke (1984) have emphasized the usefulness of a structured classroom approach. To determine the success of the structured approach, Rubin and Phillips (1965) in a landmark study, selected moderately to severely emotionally disturbed children. The three approaches employed were the structured approach, the permissive approach, and an approach which allowed children to remain in the regular classroom. The criteria used to select the children included (a) hyperactivity, (b) inattentiveness, (c) attention-seeking behaviors, (d) defiance and noncompliance behavior, (e) average or near-average intelligence, and (f) parental cooperation. Preliminary and a circular procedure in the structured group and involved arranging the behavior to be learned into a series of sequential steps. The activities were individualized for the children until each child had acquired behaviors which would enable him to interact adequately with his peers, then group repetitions were planned. Barney and Phillips (1965) also used systematic follow-through which was achieved by the application of consequences which were pleasant or unpleasant, contingent upon the child's response.

All children were tested twice using the California Achievement Test and the Behavior Rating Scale, in order to determine academic and behavioral changes in any of the groups. The group using the structured approach achieved greater gain scores on both tests than did the groups using the other approaches although differences in open and closed items between the two groups tended to limit the validity of the findings.

One of the more recent studies reported by Sallagher (1988, 1990)

enhanced the use of the structural approach in teaching vocabulary word acquisition and attainment of increased attentional work time. Eighteen exceptionally disturbed males residing at a residential group home center served as subjects.

Two learning conditions were designed. Condition A involved the subject's direct attention to a structured environment in which the experimenter made explicit the presentation of reading materials, scheduled the verbal feedback to the subject on a one-to-one basis, and provided individual subjects with self-monitoring materials. Condition B consisted of a non-structured learning environment in which the subject selected the reading materials to be processed, the experimenter scheduled the verbal feedback to the subject on a variable ratio schedule, and omitted the subject's self-monitoring materials.

The groups participated in two treatment phases for a period of sixteen days. Each subject received twenty minutes of daily instruction. The results of Gallagher's study revealed that acquisition of vocabulary words and development of attentional work time were significantly higher in the structured group than in the unstructured group.

The effects of structure and non-structure upon the academic learning of delinquent adolescents in a residential setting was explored by Harris (1971). Two learning conditions were designated as Condition A and Condition B. Condition A involved the subjects' direct attention to a structured environment. Condition B consisted of a learning environment in which the subjects were self-directed. In both conditions, the vocabulary words learned and the amount of attentional work time acquired were recorded. It was concluded that

delinquent adolescents in residential settings respond similarly to the structured and non-structured environment when performance is measured by the acquisition of vocabulary words and the attainment of attentional work time. The results have implications for appropriate instructional techniques associated with various stages of human growth and development.

Summary

Learning styles of children and educational programs for the emotionally disturbed have been reviewed. Few studies have been systematically researched and reported which consider learning styles of both the normal and emotionally disturbed public school populations. It appears that continuous scientific research by educators is needed in order to develop correlations between specific behaviors and academic achievement. The results will lead the way to the development of a systematic approach to the education of both normal and emotionally disturbed children.

CHAPTER TWO

THE DESIGN

Definition of Terms

1. Emotional Disturbance. A term that refers to cognitive and emotional behaviors that are inconsistent to the expectations of the dominant society whether in school or within other spheres of the child's life.
2. Structure. A systematic, clearly defined set of behaviors which serve as a specific regimen that is designed by the researcher.
3. Spontaneous. A set of behaviors which serve as its order determined by the subject.

Purpose of the Study

The purpose of the study was to measure the effects of two learning conditions, structured and non-structured, on the number of vocabulary words learned, and the extent of attentional work time secured by emotionally disturbed and normal students attending public schools. Independent variables assigned in each of the learning conditions included (a) the order of presentation of word material, (b) the scheduling of the researcher's verbal feedback and (c) the availability of a self-recording activity.

Null Hypothesis

- H₁: There is no significant difference between emotionally disturbed and normal students with respect to number of words learned.
- H₂: There is no significant difference between treatment with respect to number of words learned by emotionally disturbed and normal students.

- H_{11} There is no significant difference between treatments with respect to the number of words learned by emotionally disturbed and normal students.
- H_{12} There is no significant difference between days with respect to number of words learned by emotionally disturbed and normal students.
- H_{13} There is no significant interaction between type and response with respect to number of words learned by emotionally disturbed and normal students.
- H_{14} There is no significant interaction between type and treatment with respect to number of words learned by emotionally disturbed and normal students.
- H_{15} There is no significant interaction between response and treatment with respect to number of words learned by emotionally disturbed and normal students.
- H_{16} There is no significant interaction between type and days with respect to number of words learned by emotionally disturbed and normal students.
- H_{17} There is no significant interaction between response and days with respect to number of words learned by emotionally disturbed and normal students.
- H_{18} There is no significant interaction between treatment and days with respect to number of words learned by emotionally disturbed and normal students.
- H_{19} There is no significant interaction between type, response, and treatment with respect to number of words learned by emotionally disturbed and normal students.
- H_{20} There is no significant interaction between type, response, and days with respect to number of words learned by emotionally disturbed and normal students.
- H_{21} There is no significant interaction between type, treatment, and days with respect to number of words learned by emotionally disturbed and normal students.
- H_{22} There is no significant interaction between response, treatment, and days with respect to number of words learned by emotionally disturbed and normal students.
- H_{23} There is no significant interaction between type, response, treatment and days with respect to number of words learned by emotionally disturbed and normal students.

- H_{1A} There is no significant difference between emotionally disturbed and normal students with respect to attentional work time scored.
- H_{1B} There is no significant difference between sequences with respect to attentional work time scored by emotionally disturbed and normal students.
- H_{1C} There is no significant difference between treatments with respect to attentional work time scored by emotionally disturbed and normal students.
- H_{1D} There is no significant difference between days with respect to attentional work time by emotionally disturbed and normal students.
- H_{2A} There is no significant interaction between type and sequence with respect to attentional work time scored by emotionally disturbed and normal students.
- H_{2B} There is no significant interaction between type and treatment with respect to attentional work time scored by emotionally disturbed and normal students.
- H_{2C} There is no significant interaction between sequence and treatment with respect to attentional work time scored by emotionally disturbed and normal students.
- H_{2D} There is no significant interaction between type and days with respect to attentional work time scored by emotionally disturbed and normal students.
- H_{2E} There is no significant interaction between sequence and days with respect to attentional work time scored by emotionally disturbed and normal students.
- H_{2F} There is no significant interaction between treatment and days with respect to attentional work time scored by emotionally disturbed and normal students.
- H_{2G} There is no significant interaction between type, sequence, and treatment with respect to attentional work time scored by emotionally disturbed and normal students.
- H_{2H} There is no significant interaction between type, sequence, and days with respect to attentional work time scored by emotionally disturbed and normal students.
- H_{2I} There is no significant interaction between type, treatment, and days with respect to attentional work time scored by emotionally disturbed and normal students.
- H_{2J} There is no significant interaction between sequence, treatment, and days with respect to attentional work time scored by emotionally disturbed and normal students.

- H₂ : There is no significant interaction between type, response, group, and type with respect to attentional work time scored by emotionally disturbed and normal students.

Method

Twenty-four male students were selected to participate in the present investigation. Twelve students were diagnosed as emotionally disturbed by a psychologist and/or psychiatrist, and subsequently placed in a special public school setting for emotionally disturbed, the Seaway School in Orlando, Florida. The remaining twelve students attended regular public school classes at Glen Springs Elementary School in Jacksonville, Florida.

Twenty-two of the subjects had intelligence scores which fell within the normal range as determined by standardized intelligence test scores available from the subjects' cumulative school records. Ten subjects had intelligence scores which fell below the normal range.

Each emotionally disturbed subject was randomly assigned to one of two groups, Group M₁ or Group M₂. Each normal subject was matched for age and intelligence with each emotionally disturbed subject and assigned to corresponding Group N₁ or Group N₂. Information pertaining to the age and intelligence of the groups is provided in Tables 1 and 2. A summary of identifying information for each subject is presented in Appendix B.

Further identifying information, teacher rating of behavior, was obtained by utilizing the Behavioral Classroom Rating Scale (1970) (Green & Ballack, 1971; Ballack & Green, 1970). Behavioral ratings were completed for only the emotionally disturbed subjects. The behavioral characteristics are presented in Appendix B.

Table 1

Reported Chronological Age and Intelligence
Data for Verbal Ability Subtests

Group AB₁ and Group AB₂

	Group AB ₁	Group AB ₂
Mean Age	9.8	9.8
Age Range	7-6 to 11-0	7-6 to 11-0
Mean Intelligence	98	97
Intelligence Level Range	90 to 118	88 to 120

Table 2

Reported Chronological Age and Intelligence
Data for Spatial Ability

Group AB₁ and Group AB₂

	Group AB ₁	Group AB ₂
Mean Age	9.8	9.8
Age Range	7-6 to 11-0	7-6 to 11-0
Mean Intelligence	98	98
Intelligence Level Range	88 to 117	78 to 105

Learning Design

Two learning conditions were designed as Condition A and Condition B. Condition A involved the subject's effort reflected in a structured environment in which the researcher (a) ordered the presentation of reading materials (b) scheduled the verbal feedback to the subject on a one-to-one basis and (c) provided individual subjects with self-reading materials. Condition B consisted of a learning environment in which (a) the subject selected the reading materials to be presented (b) the researcher scheduled the verbal feedback to the subject on a one-to-one basis schedule and (c) the subject's self-reading materials were limited.

The groups participated in two treatment phases for a period of twelve sessions. Groups AB_1 and AB_2 were assigned to Condition A in the first phase (1st session) of the study and to Condition B in the second phase (12th session). The reverse order was employed for the six subjects in Groups BA_1 and BA_2 . Subjects designated as Groups AB_1 and AB_2 were placed in Condition A first. Subjects designated as Groups BA_1 and BA_2 were placed in Condition B first.

Table 2

Order of Treatment Conditions Assigned
to the Four Experimental Groups

Group Designation	Treatment 1	Treatment 2
Experiment AB_1 (functionally illiterate)	Condition A (structured)	Condition B (self-structured)
Experiment BA_1 (functionally illiterate)	Condition B (non-structured)	Condition A (structured)
Experiment AB_2 (normal)	Condition A (structured)	Condition B (semi-structured)
Experiment BA_2 (normal)	Condition B (non-structured)	Condition A (structured)

Reading Materials

The reading materials consisted of the Book Project Pages (1961) which were unfamiliar to both groups. A vocabulary list of the words appearing in the project and primer books was made. The secondary words were then translated into the Nelson (1968) symbol system. Since this symbol system was unknown to the twenty-four subjects, their initial instructional level had knowledge of none. Consequently, the necessity of measuring the degree of distorting the subjects' study time had in recognizing and understanding English printed words was avoided.

In the Nelson system, each letter of the English alphabet was replaced with a new symbol. The symbol did not require a new name as one used to be associated with each symbol. The subjects were not taught the individual names or sounds of the 26 symbols; rather, they were taught to associate the visual symbols in a word with the researcher's verbalization. The Nelson symbol system is illustrated in Appendix C.

Each word from the translated vocabulary list was printed separately on a three by five inch card. A set of cards was made for every subject. The cards were presented in order of their appearance in the project and primer books. These books were also translated into the symbol system.

Word-recording Cards

The word-recording card consisted of a sheet of four inch by twelve inch red top paper, divided into six inch squares. Each six inch square represented one word. Full thickness glue was used to cover the recording card.

Daily Instruction

All subjects received twenty minutes of individual instruction during each of the twelve sessions. Vocabulary instruction was designed to simulate the whole word approach to reading. The subject was presented with a word card, accompanied by the experimenter's verbalization of the word.

The subjects received daily instruction at an appointed time of the day and this schedule remained constant during the entire study. All learning sessions were conducted in an office in the subjects' premises. The offices were equipped with a student desk and chair, a radio and a chair and a card file box.

As a method of holding time constant for all learning sessions a kitchen timer was set for twenty minutes. The timing device was a stimulus which served to clarify the amount of work time reported of each subject. The subjects were able to see the kitchen timer; consequently, subjects were cognizant of the minutes remaining for work time. Subject attendance to the twenty minute interval was maintained.

Measuring Vocabulary Skills

Advancement in vocabulary learning was measured by learning criteria. Each subject was required to respond successfully to the new word visually which was presented immediately following the learning period. A series of three successful trials was necessary before he was determined that acquisition occurred. The measure of vocabulary learning was the number of new words the subject acquired in a specified time interval.

Defining Attentional Behaviors

Attentional work behavior was defined in terms of the subject attending to the learning materials and making appropriate responses while seated at his desk. Specifically, attentional work behaviors included (a) responses to the visual stimuli associated with the word cards; (b) oral reading from the translated task sheet primary to participation in the word game; (c) illustrations, copy development, of vocabulary words; (d) preparation of the reading cards for review and (e) reciting of the newly acquired vocabulary words. All other responses were included as non-attentional work behaviors. A majority of these behaviors included dependency, out-of-seat activities, and subject initiated social conversations.

During the learning sessions, a record was made of the subject's non-attentional work behaviors by using a stop watch controlled by the researcher. The non-attentional time accumulated was subtracted from lesson minutes to produce a recording of attentional work time. The stop watch timing was carried on as continuously as possible. Time periods were not made known to the subjects.

Equipment

Learning Condition A

Condition A consisted of a structured setting in which the subject completed each specific task using the designated procedure. A description of the instructions given to the subject appears in Appendix B. The researcher placed every minute of the subject's time, expected the subject to perform all assigned tasks, and applied verbal feedback systematically to attentional work behaviors. The

self-recording activity was also completed. The twenty minute session was divided into three time intervals:

First Minute Interval

The subject was required to arrange the stimuli for the immediate learning environment by (a) reading himself at the desk; (b) taking out his set of reading cards from the card file box; and (c) reviewing his vocabulary cards before the first session. The subject reviewed his set of required reading cards with instruction by the researcher utilizing either a flash card drill, configuration game, or drill in the reading unit.

Each correct response was rewarded with verbal praise. An incorrect response was given a verbal reply of "No," accompanied by a repetition of the researcher's initial query. If the subject's second answer was correct, the subject was rewarded with verbal praise. However, if the subject's second response was incorrect, the experimenter replied with, "No, the word is _____."

Two Minute Interval

The researcher introduced the reading cards by showing the card and pronouncing the word. The words were pronounced in order of their appearance in the primers. Each subject's correct verbal response to the word card was reinforced by the researcher's feedback in the form of verbal praise. Every incorrect verbal response to the stimuli was followed up, "No, the word is _____." This type of activity was continued until the ten minute period ended.

The subjects were informed of the learning objectives and were

required to respond successfully to each word card for a series of three trials before acquisition occurred. The measure of vocabulary learning was the number of new words the subject acquired in the ten minute interval.

Five Minute Interval

After the ten minute interval, the subject added the newly acquired word cards to the set of words already acquired, and placed them in the word file box. The researcher reviewed the words that the subject had not learned through acquisition. These words were added to the remaining word cards which had not been presented to the subject and were presented again at another session.

The subject used a felt marking pen which was kept in the desk to color in the appropriate number of one inch squares which represented the self-reporting card. Each square colored represented the acquisition of one new word.

When the subject completed the recording, the researcher asked, "How many new words have you learned today? How many _____ words." The subject then returned the recording card and the felt marking pen to his desk.

The subject read orally as many pages as the required vocabulary and phonics time permitted. When correct verbal responses were made to each line on a reading page, praise was given by the researcher. When an incorrect response was given to a word on the page, the subject received a negative response accompanied by a positive correction. The oral reading terminated at the end of the twenty minute language session. The subject was required to replace the book in the designated area.

Each day's session ended with a researcher's positive comment relevant to the subject's work performance.

Learning Environment

The learning environment was a setting in which the activities were modified to meet the subject's response. The subject had the opportunity to indicate individual choice of reading activities relevant to the learning session and the researcher was available to guide the subject in these response choices. A description of the instructions that were given to the subject is included in Appendix B. The specific learning activities included gathering of word cards, sitting at the desk, following the researcher's instruction, reading word cards, and oral reading. The subject was not required to complete the assigned tasks nor follow a specific number of activities. Researcher's verbal feedback was given on a one to one basis. The self-recording task was omitted in this learning condition.

Twenty Minute Interval

The format of each session's activities varied within the context of reading. Vocabulary review, new vocabulary introduction, and oral reading was always available; however, alternate activities could be selected. These substitute activities included (a) social conversation between the subject and the researcher; (b) the illustrations of complex drawings of vocabulary words; or (c) participation in a word card game.

If the subject decided to engage in new vocabulary introduction, the ten minute time allotment of Condition A was not exceeded. Furthermore, the subject had to respond successfully to each word card for a series of three trials before acquisition occurred. The measure of

vocabulary learning was the number of new words the subject acquired within a ten minute interval. There were the only limits placed on any of the subject's responses.

When the subject engaged in the specific tasks of oral reading, vocabulary review and new vocabulary instruction, researcher's feedback was given. Praise was given for correct responses. The ratio of feedback to the subject's responses was on a continuous ratio schedule. Researcher verbal responses to the visual stimuli were followed by, "No, the word is _____." The subject did not engage in the self-reading activity.

Data Analysis

Data was analyzed using the Statistical Computer Program, SAS 8PV, Edmon, 1988 which is a split plot design yielding complete analysis of variance on 15 sources associated with each dependent variable. The differences detected between the emotionally disturbed and normal students represented statistical significance at the .05 level.

Significance

The present study extends knowledge of the influence of a structured academic environment on the acquisition of a reading vocabulary and amount of attentional work time by twice emotionally disturbed boys attending a special public school facility and twice normal boys attending a public elementary school. This study adds evidence to previous studies done by Marley and Phillips (1988), Collier (1985), and Harris (1979).

Findings that are generated from this study will have implications

for program planning, environmental designs for the acquisition of vocabulary words, reading and situational work time. Also, implications from this study should assist teachers in implementing differential teaching strategies for work with attentionally disturbed children in public schools.

CHAPTER IV
ANALYSIS OF DATA AND CONCLUSIONS

The effects of structure and non-structure on the acquisition of vocabulary words and the occurrence of situational work time were investigated. There were three independent variables: (a) the order of presentation of work materials; (b) the availability of self-recording materials; and (c) the scheduling of verbal feedback to the subject on a continuous basis. The independent variables, (a) the order of presentation of work materials and (b) the availability of self-recording materials, were manipulated in order to measure the effects on two dependent variables, vocabulary words learned and situational work time occurred.

The research was conducted with twelve emotionally disturbed boys attending Gateway School in Orlando, Florida, a special public school for the emotionally disturbed, and twelve normal boys attending Pine Springs Elementary School in Gainesville, Florida. The boys were taught to recognize vocabulary words which is a basic skill necessary in reading and which is extremely important in comprehension and functional thinking (1944). The Keller System System (1944) was used to establish a baseline of 80% with all subjects, some of whom were familiar with the symbols used in the system. Positive reinforcement (minimum threshold) current level of word recognition were then applied.

Situational work time carried by the students was related to the

second dependent variable in order to give a definitive measure of time spent by emotionally disturbed and normal students in appropriate academic behaviors. The use of two instructional settings provided the researcher the opportunity to assess the subjects' attentiveness with time. Measurements of the magnitude of vocabulary words and the amount of attentional work time were accurate and precise.

The twelve emotionally disturbed students in the study were selected from a defined population and were randomly assigned to one of two emotionally-disturbed groups. The twelve normal students were also selected from a defined population and were matched for age and intelligence with each emotionally disturbed subject and assigned to corresponding groups. Each subject was taught on an individual basis. Thirty skill byproducts, related to allow comparisons on the students' performance on each of the dependent variables, were tested.

Results and Discussion

Attentional Work

A Split Plot Factorial was utilized to accommodate dependent variable data (Litt, 1981). Data were then programmed into the Statistical Computer Program, SAS 605, for complete analysis of variance (Litt, 1980). The results of the analysis of variance for the first dependent variable, vocabulary words learned, is presented in Table 4. The results of the analysis of variance on the second dependent variable, attentional work time learned, is provided in Table 5. The differences detected between emotionally disturbed and normal students were considered statistically significant at the .05 level.

Table 4

Analysis of Variance for Secondary Means Derived
by First-Order 2^3 -Factorial and General Random

Source	SS	df	MS	F
Type	654.81	1	654.81	22.78**
Response	99.80	1	99.80	3.38
Treatment	92.80	1	92.80	3.13
Day	32.37	3	10.79	.37
Type/Response	11.48	1	11.48	.38
Type/Treatment	339.48	1	339.48	14.25**
Response/Treatment	241.00	1	241.00	14.50**
Type/Day	180.73	3	60.25	20.08**
Response/Day	66.47	3	22.16	8.27
Treatment/Day	68.04	3	22.68	8.15
Type/Response/Treatment	125.01	1	125.01	13.86**
Type/Response/Day	13.27	3	4.42	.16
Type/Treatment/Day	65.81	3	21.94	8.16**
Response/Treatment/Day	15.31	3	5.10	.63
Type/Response/Treatment/Day	9.88	3	3.30	.43
Page 1 (Type/Response)	602.94	30	20.10	-----
Page 1/Treatment (Type/Response)	38.11	30	1.27	-----
Page 1/Day (Type/Response)	254.32	100	2.54	-----
Page 1/Treatment/Day (Type/Response)	421.34	100	4.21	-----

**Significant at .01

Table 1

Summary of Statistics for Researcher with Time Adjusted
for Sexually Disordered and Normal Subjects

Source	df	SS	MS	F
Total	140.00	1	140.00	20.87**
Sequence	4.00	1	4.00	.26
Treatment	.00	1	.00	.00
Day	10.00	1	1.10	.08
Type/Sequence	10.00	1	10.00	.67
Type/Treatment	.00	1	.00	.00
Sequence/Treatment	20.00	1	20.00	2.86**
Type/Day	40.00	1	4.00	.79
Sequence/Day	40.00	1	4.00	1.06
Treatment/Day	10.00	1	1.00	0.10*
Type/Sequence/Treatment	100.00	1	100.00	6.87*
Type/Sequence/Day	40.00	1	4.00	1.00
Type/Treatment/Day	100.00	1	10.00	0.72**
Sequence/Treatment/Day	10.00	1	1.00	.03
Type/Sequence/Treatment/Day	10.00	1	1.00	1.10
Pop1 (Type/Sequence)	610.00	30	20.33	***
Pop1/Treatment (Type/Sequence)	40.00	20	2.00	***
Pop1/Day (Type/Sequence)	610.00	180	3.39	***
Pop1/Treatment/Day (Type/Sequence)	610.00	180	3.39	***

* Significant at .05

**Significant at .01

Data collected on total number of words learned and total attentional work time occurred for each of the 12 emotionally disturbed and 12 normal students is provided in Tables 4, 5, 6 and 7. Daily number of words learned and daily amount of attentional work time incurred by emotionally disturbed and normal students can be found in Appendix 2. Attentional work time is recorded in total minutes and seconds with a possible total of 360 minutes.

Hypothesis 1

The first null hypothesis stated that the number of words learned by emotionally disturbed students would not differ from those learned by the normal students. The F value of 21.79 (df=1,20) was significant at the .01 level thus rejecting the null hypothesis. The normal students ($M = 7.25$ words) learned significantly more words than the emotionally disturbed students ($M = 4.87$ words).

Hypothesis 2

The second null hypothesis stated that the number of words learned by the emotionally disturbed students would not differ from those learned by the normal students with respect to sequence. The F value of 2.29 (df=1,20) was not significant at the .05 level thus confirming the null hypothesis. Sequence alone did not have a significant effect on emotionally disturbed and normal students with respect to the number of vocabulary words learned.

Hypothesis 3

The third null hypothesis stated that the number of words learned by emotionally disturbed students would not differ from those learned

Table 3
Total Number of Vocabulary Words Learned by
Randomly-Distributed Students, Reported by order of condition

Subjects	Vocabulary Words Learned		
	Condition 1 (Non-structured)	Condition 2 (Non-structured)	Total
S_1	29	4	34
S_2	36	20	56
S_3	37	7	44
S_4	46	14	60
S_5	24	2	26
S_6	26	2	28
	Condition 3 (non-structured)	Condition 4 (structured)	Total
S_7	8	46	54
S_8	41	46	87
S_9	12	38	50
S_{10}	14	45	59
S_{11}	14	44	58
S_{12}	40	46	86

Table 7

Total Number of Vocabulary Words Learned
by Native Speakers, Separated by Order of Condition

Subjects	Vocabulary Words Learned		
	Condition A (structured)	Condition B (non-structured)	Total
P_{11}	35	56	91
P_{12}	26	46	72
P_{13}	49	62	111
P_{14}	38	49	87
P_{15}	64	62	127
P_{16}	48	41	89
	Condition B (non-structured)	Condition A (structured)	Total
P_{21}	58	46	104
P_{22}	33	47	80
P_{23}	62	54	116
P_{24}	68	57	125
P_{25}	57	56	113
P_{26}	53	69	122

TABLE 2

Total Amount of Additional Work Time, Reported in
Minutes and Seconds, Incurred by Responding Classified Personnel
Reported by Type of Condition

Subject	Additional Work Time Incurred		
	Condition A (Overcrowded)	Condition B (Non-structured)	Total
R_1	108' 30"	08' 00"	180' 30"
R_2	108' 30"	108' 30"	217' 00"
R_3	87' 00"	31' 30"	118' 30"
R_4	112' 00"	31' 00"	143' 00"
R_5	103' 00"	103' 30"	206' 30"
R_6	105' 30"	43' 00"	148' 30"
<hr/>			
	Condition B (Non-structured)	Condition A (Overcrowded)	Total
R_7	37' 30"	64' 00"	101' 30"
R_8	103' 30"	114' 00"	217' 30"
R_9	73' 00"	83' 30"	156' 30"
R_{10}	87' 30"	100' 00"	187' 30"
R_{11}	83' 30"	100' 00"	183' 30"
R_{12}	103' 30"	100' 00"	203' 30"

Table 8

Total Amount of Additional Work Time Reported by
Students and Parents, Reported by School Principals,
Reported by Order of Condition

Subjects	Additional Work Time Reported		
	Condition A (over-saturated)	Condition B (over-saturated)	Total
\bar{v}_{11}	150' 00"	130' 00"	280' 00"
\bar{v}_{14}	117' 00"	117' 00"	234' 00"
\bar{v}_{13}	177' 30"	115' 45"	293' 15"
\bar{v}_{26}	113' 00"	117' 45"	230' 45"
\bar{v}_{27}	154' 30"	115' 00"	269' 30"
\bar{v}_{28}	130' 00"	70' 10"	200' 10"
	Condition B (over-saturated)	Condition A (over-saturated)	Total
\bar{v}_{15}	105' 30"	177' 15"	282' 45"
\bar{v}_{29}	107' 30"	115' 45"	223' 15"
\bar{v}_{30}	115' 00"	130' 00"	245' 00"
\bar{v}_{32}	118' 30"	114' 00"	232' 30"
\bar{v}_{33}	115' 30"	118' 30"	234' 00"
\bar{v}_{34}	118' 00"	124' 00"	242' 00"

by the normal students with respect to treatment. The F value of 1.44 ($df=1,10$) was not significant at the .05 level thus confirming the null hypothesis. Treatment alone did not have a significant effect on emotionally disturbed and normal students with respect to the number of vocabulary words learned.

Hypothesis 4

The fourth null hypothesis stated that the number of words learned by emotionally disturbed students would not differ from those learned by the normal students with respect to type. The F value of .51 ($df=1,10$) was not significant at the .05 level, thus confirming the null hypothesis. Type alone did not have a significant effect on emotionally disturbed and normal students with respect to the number of vocabulary words learned.

Hypothesis 5

The fifth null hypothesis stated that the number of words learned by the emotionally disturbed students would be no greater than those learned by the normal students with respect to type by treatment interaction. The F value of .10 ($df=1,10$) was not significant at the .05 level thus confirming the null hypothesis.

Hypothesis 6

The sixth null hypothesis stated that the number of words learned by the emotionally disturbed students would not differ from those learned by normal students with respect to type by treatment interaction. The F value of 14.25 ($df=1,10$) was significant at the .05 level thus rejecting the null hypothesis. Cumulative scores for the

7.

normal students advanced from a mean of 4.47 words learned in Treatment 1 to a mean of 4.88 words learned in Treatment 2. Because of the increased number of zero words learned in Treatment 2 the emotionally disturbed students dropped from a mean of 5.11 words learned in Treatment 1 to a mean of 4.53 words learned in Treatment 2.

Hypothesis 1

The seventh null hypothesis stated that the number of words learned by the emotionally disturbed and normal students would not differ with respect to sequence by treatment interaction. The F value of 14.57 ($df=1,100$) was significant at the .01 level thus rejecting the null hypothesis. Combined words learned by emotionally disturbed and normal students in sequence 10 decreased from a mean of 5.37 words to a mean of 4.45 words when moving from Treatment 1 (structured) to Treatment 2 (unstructured). Combined words in sequence 16 increased from a mean of 4.76 words to a mean of 4.81 words when moving from Treatment 1 (unstructured) to Treatment 2 (structured).

Hypothesis 2

The eighth null hypothesis stated that the number of words learned by emotionally disturbed students would not differ from those learned by the normal students with respect to type by day interaction. The F value of 10.78 ($df=2,100$) was significant at the .01 level thus rejecting the null hypothesis. As the days accumulated the emotionally disturbed students decreased in words learned while the normal students increased in number of words learned. The results are presented in Table 12.

Table 13

Words learned by Emotionally Disturbed and Normal
Students as Refr. by Day Interactions Ignored by Postr.

Students	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Emotionally Disturbed	5.45	5.45	6.75	6.00	6.75	5.75
Normal	7.45	7.45	7.87	8.50	7.87	8.50

Hypothesis 1

The sixth null hypothesis stated that the number of words learned by the emotionally disturbed and normal students would not differ with respect to frequency by day interaction. The F value of 2.27 ($df=5,100$) was not significant at the .05 level thus confirming the null hypothesis.

Hypothesis 1a

The sixth null hypothesis stated that the number of words learned by the emotionally disturbed and normal students would not differ with respect to frequency by day interaction. The F value of 2.45 ($df=5,100$) was not significant at the .05 level thus confirming the null hypothesis.

Hypothesis 1b

The seventh null hypothesis stated that the number of words learned by the emotionally disturbed students would not differ from those learned by the normal students with respect to type by frequency by treatment interaction. The F value of 12.45 ($df=4,200$) was significant.

and at the .05 level when rejecting the null hypothesis. All aspects of the information data are presented in Table 11. In sequence H_1

Table 11

Words Learned by Emotionally Disturbed and Normal Children
in Two Experiments by Treatment Comparison, Reported by Group

Group Designation	Treatment 1	Treatment 2
H_1 (Emotionally Disturbed)	4.08 words (structured)	1.08 words (non-structured)
H_1 (Emotionally Disturbed)	4.33 words (non-structured)	4.57 words (structured)
H_2 (Normal)	4.47 words (structured)	4.33 words (non-structured)
H_2 (Normal)	7.58 words (non-structured)	9.44 words (structured)

the emotionally disturbed students increased from a mean of 4.08 words learned in the structured Treatment 1 to a mean of 1.08 words learned in the non-structured Treatment 2. In sequence H_2 the emotionally disturbed students increased from a mean of 4.33 words learned in the non-structured Treatment 1 to a mean of 4.57 words learned in the structured Treatment 2. The emotionally disturbed students learned more words in the structured condition. In sequence H_2 the normal students increased from a mean of 4.47 words learned in the structured treatment 1 to a mean of 4.33 words learned in the non-structured treatment 2. In sequence H_2 the normal students increased from a mean of 7.58 words learned in the non-structured treatment 1 to 9.44 words learned in structured Treatment 2. The

normal students' improvement in words learned regardless of treatment. Improvement by normal students placed on the unstructured condition in Treatment 1 could be attributed to the maintenance factor (Hilson & Haring, 1980), which indicated that students no longer required external controls after having acquired positive behaviors on the previous condition. Normal students maintained the structure through condition 2 in Treatment 1. No significance is indicated by the data in the number of words learned by the emotionally disturbed students on the unstructured condition first (6.38 words) when compared with the normal students receiving the structured condition first (6.47). A difference does appear in words learned between the emotionally disturbed students receiving the unstructured condition first (6.38) and the normal students receiving the unstructured condition first (7.85).

Hypothesis 11

The twelfth null hypothesis stated that the number of words learned by the emotionally disturbed students would not differ from those learned by the normal students with respect to type by response by day interaction. The F value of .72 ($df=5,100$) was not significant at the .05 level thus confirming the null hypothesis.

Hypothesis 12

The thirteenth null hypothesis stated that the number of words learned by the emotionally disturbed students would not differ from those learned by the normal students with respect to type by treatment by day interaction. The F value of 3.15 ($df=4,100$) was significant at

the .01 level thus rejecting the null hypothesis. The decrease in words learned by the emotionally disturbed students over days compared with the increase of words learned by the normal students over days resulted in a significant interaction. The results are reported in Table 12.

Table 12

Words Learned by Emotionally Disturbed and Normal Students
in Four Days by Treatment by Day Interaction, Adjusted by Sex

Emotionally Disturbed	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Treatment 1	8.17	8.87	9.83	1.15	4.58	3.75
Treatment 2	4.75	4.17	4.47	4.75	5.08	3.83
Normal	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Treatment 1	6.75	6.83	6.83	6.88	6.83	7.83
Treatment 2	6.43	7.75	8.83	9.33	9.83	10.58

Hypothesis 1d

The Fourteenth null hypothesis stated that the number of words learned by the emotionally disturbed and normal students would not differ with respect to response by treatment by day interaction. The F value of .70 ($df=5,100$) was not significant at the .05 level thus confirming the null hypothesis.

Hypothesis 12

The eleventh null hypothesis stated that the number of words learned by the emotionally disturbed students would not differ from those learned by normal students with respect to type, sequence, treatment, and day interaction. The F value of .32 (df=5,100) was not significant at the .05 level thus confirming the null hypothesis.

Hypothesis 13

The twelfth null hypothesis stated that the amount of nonclassroom work time learned by the emotionally disturbed students would not differ from time learned by normal students. The F value of 21.87 (df=1,80) was significant at the .01 level thus rejecting the null hypothesis. The normal students (\bar{X} 18' 12" per day) exhibited a greater amount of attentional work time than the emotionally disturbed students (\bar{X} 16' 00" per day).

Hypothesis 14

The thirteenth null hypothesis stated that the amount of attentional work time learned by the emotionally disturbed students would not differ from the time learned by the normal students with respect to the sequence (A) or (B). The F value of .26 (df=1,30) was not significant at the .05 level thus confirming the null hypothesis. Sequence alone did not have a significant effect on emotionally disturbed and normal students with respect to differentiating the amount of attentional work time learned.

Hypothesis 15

The fourteenth null hypothesis stated that the amount of atten-

tional work time accrued by emotionally disturbed students would not differ from the time accrued by normal students with respect to class-
room. The F value of .03 ($df=1,180$) was not significant at the .05
level thus confirming the null hypothesis. Treatment alone did not
have a significant effect on emotionally disturbed and normal students
with respect to differentiating the amount of attentional work time
accrued.

Hypothesis 18

The alternative hypothesis stated that the amount of attentional
work time accrued by emotionally disturbed students would not differ
from the time accrued by normal students with respect to days. The
F value of .03 ($df=3,550$) was not significant at the .05 level thus
confirming the null hypothesis. Days alone did not have a signifi-
cant effect on emotionally disturbed and normal students with respect
to differentiating the amount of attentional work time accrued.

Hypothesis 19

The fourth null hypothesis stated that the amount of atten-
tional work time accrued by emotionally disturbed students would not
differ from the time accrued by normal students with respect to type
of response organization. The F value of .47 ($df=1,30$) was not signifi-
cant at the .05 level thus confirming the null hypothesis.

Hypothesis 20

The twenty-first null hypothesis stated that the amount of atten-
tional work time accrued by emotionally disturbed students would not
differ from the time accrued by normal students with respect to type

by treatment interaction. The F value of .46 ($df=2,100$) was not significant at the .05 level thus confirming the null hypothesis.

Hypothesis 12

The fourth research null hypothesis stated that the amount of attentional work time accrued by the continuously disturbed and normal students would not differ with respect to response by treatment interaction. The F value of 14.46 ($df=1,201$) was significant at the .01 level thus rejecting the null hypothesis. Combined attentional work time accrued by continuously disturbed and normal students in response to decreased from 23' 54" to 14' 43" when moving from Treatment 1 (unstructured) to Treatment 2 (semi-structured). Combined attentional work time in response to increased from 16' 27" to 24' 20" when moving from Treatment 1 (semi-structured) to Treatment 2 (structured).

Hypothesis 13

The fifth research null hypothesis stated that the amount of attentional work time accrued by the continuously disturbed students would not differ from the time accrued by the normal students with respect to time by day interaction. The F value of .75 ($df=1,100$) was not significant at the .05 level thus confirming the null hypothesis.

Hypothesis 14

The sixth research null hypothesis stated that the amount of attentional work time accrued by the continuously disturbed and normal students would not differ with respect to response by day interaction. The F value of 1.34 ($df=1,100$) was not significant at the .05 level thus confirming the null hypothesis.

Experiment 21

The twenty-fifth null hypothesis stated that the amount of attentional work time accrued by the emotionally disturbed and normal students would not differ with respect to treatment by day interaction. The F value of 2.64 ($df=5,1000$) was significant at the .05 level thus rejecting the null hypothesis. Attentional work time for all students in Treatment 1 decreased each subsequent day while attentional work time for all students in Treatment 2 increased. The results are presented in Table 13.

Table 13

Attentional Work Time Accrued by Emotionally Disturbed and Normal Students in Treatment by Day Interaction, Reported in Hours

Treatment	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Treatment 1	28'38"	28'53"	27'55"	27'53"	27'33"	27'41"
Treatment 2	27'48"	28'54"	27'54"	27'53"	27'48"	28'45"

Experiment 24

The twenty-sixth null hypothesis stated that the amount of attentional work time accrued by the emotionally disturbed students would not differ from the time accrued by the normal students with respect to type of response by treatment interaction. The F value of 4.07 ($df=1,100$) was significant at the .05 level thus rejecting the null hypothesis. All aspects of the interaction data are presented in Table 14. In response 24, the emotionally disturbed students decreased

in structural work time from a mean of 18' 3" in the structured Treatment 1 to 14' 30" in the non-structured Treatment 2. In response 8B, the structurally disturbed students increased from a mean of 18' 1" in the non-structured Treatment 1 to 17' 30" in the structured Treatment 2. The structurally disturbed students spent more structural work time in the structured conditions. In response 8C, the normal students increased in structural work time from a mean of 18' 40" in the structured Treatment 1 to 18' 30" in the non-structured Treatment 2. In response 8D, the normal students increased from a mean of 18' 30" to 19' 30". The normal students increased in structural work time regardless of Treatment. The structurally disturbed students in the non-structured Treatments worked considerably less structural work time than the normal students in the same Treatments. The normal students in the structured Treatments worked more structural work time than the structurally disturbed students.

Table 14

Structural Work Time Spent by Structurally Disturbed and Normal Students in Five Response by Treatment Interaction Squares in 8A

Group Description	Treatment 1	Treatment 2
8A ₁ structurally disturbed	18' 3" (structured)	14' 30" (non-structured)
8A ₂ structurally disturbed	18' 1" (non-structured)	17' 30" (structured)
8A ₃ normal	18' 40" (structured)	18' 30" (non-structured)
8A ₄ normal	18' 30" (non-structured)	19' 30" (structured)

Hypothesis II

The twenty-seventh null hypothesis stated that the amount of educational work time accrued by the emotionally-disturbed students would not differ from the time accrued by the normal students with respect to type by treatment by day interaction. The F value of 1.89 ($df=1, 100$) was not significant at the .05 level thus confirming the null hypothesis.

Hypothesis III

The twenty-eighth null hypothesis stated that the amount of educational work time accrued by the emotionally-disturbed students would not differ from the time accrued by the normal students with respect to type by treatment by day interaction. The F value of 8.72 ($df=5, 100$) was significant at the .01 level thus rejecting the null hypothesis. Educational work time accrued on a daily basis by the emotionally-disturbed and normal students is illustrated in Table 11.

Table 11

Educational Work Time Accrued by Emotionally-Disturbed and Normal Students by Type by Treatment by Day Interaction Reported in Hours

Emotionally Disturbed	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Treatment 1	18' 15"	27' 15"	24' 15"	24' 45"	24' 54"	24' 45"
Treatment 2	24' 30"	24' 15"	24' 45"	24' 30"	21' 15"	22' 50"
Normal	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Treatment 1	24' 30"	24' 45"	24' 30"	24' 15"	24' 45"	24' 30"
Treatment 2	24' 30"	24' 30"	24' 30"	24' 30"	24' 30"	24' 30"

Hypothesis 2f

The fourth null hypothesis stated that the amount of additional work time covered by nonrandomly disturbed and normal students would not differ with respect to response by treatment by day interaction. The P value of .13 (df=5,100) was not significant at the .05 level thus confirming the null hypothesis.

Hypothesis 3f

The fourth hypothesis stated that the amount of additional work time covered by the nonrandomly disturbed students would not differ from the time covered by the normal students with respect to type, response, treatment, and day interaction. The P value of 1.11 (df=5,100) was not significant at the .05 level thus confirming the null hypothesis.

CHAPTER V SUMMARY AND RECOMMENDATIONS

The purpose of this study was to measure, analyze, and evaluate the effects of two learning conditions upon the acquisition of two school-related behaviors by twelve emotionally disturbed students and twelve normal students. The implementation of this study depended upon the translation of behavioral principles into teaching procedures relevant to academic classroom behaviors. The application of behavioral principles to classroom practice is increasingly being reported in the literature; however, no studies have been reported comparing the behaviors of emotionally disturbed and normal students utilizing both the structured and non-structured environments. Baring and Phillips (1981) investigated the structured approach and reported successful academic achievement among all students in the structured group. Gallagher (1981) used a structured approach to investigate the acquisition of vocabulary words and the assessment of situational work time in emotionally disturbed students in a residential setting. The group exposed to the structured condition had superior achievement. Harris (1978) investigated the effects of structure on delinquent adolescents in a residential setting and concluded that the students responded similarly to the structured and non-structured environments.

The current investigation measured the effects of two learning conditions, structured and non-structured, on emotionally disturbed and normal students' acquisition of two specific academic behaviors

(B) acquisition of a reading vocabulary, and (C) assessment of attentional work time. Condition A involved a static atmosphere in a structured environment in which the researcher (a) read ordered the presentation of reading materials; (B) scheduled verbal feedback with each student on a one-to-one basis; and (C) provided the student with self-reinforcing materials. Condition B consisted of a non-structured environment which (a) allowed the student to select his tasks; (b) provided verbal feedback on a one-to-one basis schedule; and (c) provided the self-reinforcing materials.

Twenty-four male students were selected to participate in the investigation. Twelve students were diagnosed as emotionally disturbed and subsequently placed in a special public school setting for emotionally disturbed students. The twelve normal students attended regular public school classes. Normal and emotionally disturbed students were matched for age and intelligence. Group assignment was done by random sampling.

Thirty null hypotheses were tested, 12 of which were disallowed through analysis of the data from the number of words learned and amount of attentional work time required by emotionally disturbed and normal students. Of the remaining 18 null hypotheses, 7 were found significant at the .05 level, while the remaining 11 were significant at the .01 level.

Emotionally disturbed students learned significantly fewer vocabulary words and accumulated less attentional work time than the normal students. Type I responses by day and type by response by treatment interactions between groups were significant for vocabulary words learned and attentional work time. The total number of words

learned by the emotionally disturbed students decreased in subsequent days of presentation whereas for the normal students the words learned increased regardless of treatment. Emotionally disturbed students learned more words and learned more attentional work time in the structured conditions. Normal students learned almost equal levels of attentional work time in both conditions but decreased in words learned in Treatment 2 regardless of the structured or non-structured condition.

Recommendations for Future Research

This study has demonstrated the effects of two inclusive conditions on the acquisition of two academic behaviors with emotionally disturbed and normal students. As a result of this investigation other questions arise which may further delineate appropriate teaching strategies or techniques applicable to emotionally disturbed and normal students. Suggestions for further research are specified below.

1. An investigation of the effects of structure and non-structure on emotionally disturbed students housed within a regular public school as compared to a separate self-contained facility.
2. An investigation of the relationship between structure and non-structure on emotionally disturbed students attending public day school facilities as compared to emotionally disturbed students housed in a residential facility.
3. An investigation of the effects of structure and non-structure on normal students housed in traditionally self-contained public school settings as compared to open-open concept school settings.
4. An investigation of the effects of structure in teaching a variety

of academic behaviors of emotionally disturbed and normal students.

2. An investigation to determine the correlation between the occurrence of off-task work time and the magnitude of a variety of other academic behaviors.

Although the results of this study apply directly only to the selected participants, the findings have implications for educational programming for other emotionally disturbed and normal students enrolled in the public schools.

APPENDIX A

**Intelligence Information Reported for Severely Disturbed
and Normal Students Participating in the Investigation**

Subjects	Birth Date	Chronol. Age at Time of Study	Intelligence Test Scale			Group Ratings	
			Stanford-Binet	WISC	Bin-Lewis	S.D.	%
1	9-12-44	7 - 4	88			8	
2	9-12-44	8 - 3		129		8	
3	10-23-44	7 - 3		92		8	
4	5-28-44	7 - 8		98		8	
5	4-20-44	7 - 7	90			8	
6	10-21-43	11 - 3		83		8	
7	9-20-40	7 - 4	88			8	
8	12-19-43	8 - 8		105		8	
9	10-14-44	7 - 3		93		8	
10	6-12-44	7 - 7	100			8	
11	12-10-43	10 - 3	100			8	
12	10-20-43	11 - 3	88			8	
13	9-20-40	7 - 3			103		8
14	9-14-40	8 - 4			107		8
15	9-08-44	7 - 3			94		8
16	5-14-44	6 - 8			88		6
17	9-20-43	9 - 9			93		8
18	12-12-42	11 - 2			94		8
19	7-02-44	7 - 3			95		8
20	10-10-44	8 - 3			103		8
21	12-12-44	9 - 2			85		7
22	9-12-44	9 - 7			104		8
23	3-22-44	7 - 12			107		8
24	7-02-43	11 - 6			103		8

Behavior Rating Scale as Reported by Teachers
of Developmentally Disabled Children

	Withdrawn^a	Aggressive/Acting Out^b
R_1	X	
R_2	X	
R_3		X
R_4		X
R_5		X
R_6	X	
R_7		X
R_8	X	
R_9		X
R_{10}		X
R_{11}		X
R_{12}	X	

^a Characterized by self-mutilations, abscence, withdrawn, timidity, isolationism, passivity and shyness

^b Characterized by disruptiveness, restlessness, rule breaking, fighting, major tantrums, oppositionism and destructiveness

APPENDIX C

ACADEMIC SYMBOLS, PICTURES

a - †

b - □

c - X

d - □

e - ⊗

f - Δ

g - m

h - □

i - U

j - n

k - □

l - V

m - q

n - o

o - ≠

p - ≡

q - ||

r - ∟

s - ⊥

t - Λ

u - o

v - o

w - o

x - —

y - z

z - |

APPENDIX B

STANDARD INSTRUCTIONS

STANDARD INSTRUCTIONS FOR M₁ AND M₂ SUBJECTS IN CHAPTER 1, FORM 1

First Subject Interview

While _____, my name is Mr. Martin. Please knock the door and be seated at your desk. You are to come here at _____, 9'clock on Monday, Tuesday, Wednesday, and Thursday. You tell us when you are to come here. You will come to this room for three weeks.

Every day as you come into the room you will see me out the kitchen door for twenty minutes. I'll place the time on my desk. You may look at it anytime you want to see how much work time is left. In the end of twenty minutes, work time will be over. A bell will ring at the end of twenty minutes.

While you are here I will teach you a code. You will learn the code. Do you know what a code is? Look at these cards and tell me if you can read any of the words. (Describe something.)

Two-Week Interview

Let's begin reading the code words. (Formal instruction initiated.)

First Subject Interview

Look at a holey card with your name written on it. You may take a hole looking you from that desk drawer. Collect one regular ten each one week you finished today.

Put the pen map in the desk drawer where you found it. If you always put the pen there, you will always be able to find it. Place the cards you have finished today in the card file box. You can keep all the

Would you leave between I have made a set of cards for every day she comes to learn the sets. Place the tally card in the top envelope on the table.

_____, you finished _____ words today. Good work. I'll see you tomorrow at _____ o'clock.

Good-bye.

Second Day Instructions for Mr. and Mrs. Roberts in
Session No. Three

Five Minute Interval

At _____ Close the door. Set your reading cards and your tally card. Put the tally card in your desk and leave your reading cards on the top of the desk so we can review your old words. We will spend the first five minutes of every session reviewing your old words.

Ten Minute Interval

We will work with the new words for ten minutes. Just before the ten minutes are over you will be asked to finish words. You must be able to read these words you have been working on these words without making a mistake. You may keep all the words you know on your set of cards. If you want any word(s), I'll keep the working word(s). You will have a chance to work on the word(s) again tomorrow.

Five Minute Interval

Put your cards in the card file box. Bring the working you to your desk. How you may work all the words you have learned today. Put the working you and the tally card away. Bring the reader book. It is in the lower right hand drawer of my desk. Put my card until the bell rings.

Now help words did you learn today? Yes, you learned _____ words. Good work. I'll see you Wednesday--
Good-bye.

Third to Sixth Day Instructions for All Subjects
in Condition A, Phase 1

Instructions were no longer given unless a subject was unable to recall the routine.

Initial Instruction for $8\frac{1}{2}$ and $14\frac{1}{2}$ Subjects in
Condition A, Phase 1

Twenty Minute Interval

While _____, My name is Mr. White. Please close the door and be seated at your desk. You are to come here at _____ o'clock on Monday, Tuesday, Wednesday, and Thursday-- Now tell me when you are to come here-- You will come in this room for three weeks--

Every day as you come into the room you will see on the kitchen timer for twenty minutes-- I'll place the timer on my desk. You may look at it anytime you want to see how much work time is left. At the end of twenty minutes work time will be over. A bell will ring at the end of twenty minutes.

While you are here I will teach you a code. You will learn the code. Do you know what a code is? Look at these cards and tell me if you can read any of the words. [Random revealing.]

Let's begin reading the code words. [Random Instruction Initiated.]

Please the words you have learned today in the word file box. Now

may keep all the words you learn, because I have made a set of cards for every boy who comes to learn the code.

There are other activities you may do when you come here to work. You may read in this reader which has been selected. There is a large box of crayons and some drawing paper. You may draw pictures to identify your code words. These pictures are called illustrations. After you have learned many code words we may play a code card game. This game may be played like the game of Concentration. [Subject examines the materials.] Let's place everything away. I'll see you tomorrow at _____ o'clock.

Good-bye.

Second to Eighth Day Instructions for 8B₁ and 8B₂ Subjects
in Condition I, Phase I

Twenty Minute Interval

Hi _____. You have twenty minutes to work. What would you like to work on today? [Subject is free to select the reading activity which may commence and finish anytime within the twenty minute interval--more than one activity may be selected.]

Initial Instructions for 8B₁ and 8B₂ Subjects
in Condition I, Phase II

Twenty Minute Interval

Hi _____. Today you may choose the activity you would like to do. There are some materials you might like to use. You may draw pictures to identify your code words. These drawings are called illustrations.

You may use the response and thinking paper I have on my desk. There is a note card given. It may be played like Concentration. You, you may choose to work on your word cards and read in the note book.

What would you like to do today? (Subject is free to select the reading activity which may commence and finish anytime within the twenty minute interval. More than one activity may be selected.)

Directed to Search for Instructions for H₁ Subjects
In Condition B, Phase II

Twenty Minute Interval

H₁ _____ What would you like to work on today? (Any activity may be selected. The order of activities may vary within the twenty minute time interval.)

Directed Instructions for H₁ and H₂ Subjects
In Condition B, Phase II

Five Minute Interval

H₁ _____, Clean the desk. Get your reading cards and bring them to post desk. We will spend the first five minutes of every session reviewing your old words.

Ten Minute Interval

We will work with the new words for ten minutes. Just before the ten minutes are over you will be tested on those words. You must be able to read those words you have been working on today three times without making a mistake. You may keep all the words you have in your set of cards. If you miss any word(s), I'll keep the testing material. You will have a chance to read the word(s) again tomorrow.

File Paper Labels

Put your cards in the card file box. Here is a tally card with your name written on it. You may take a full exchange pin from that desk drawer. Color one square for each one word you learned today.

Put the pin deep in the desk drawer where you found it. If you always put the pin there, you will always be able to find it again. Put the tally card in the big envelope on the table. Help the reader to your desk and he will read until the bell rings.

_____ put into learned _____ words today. Good work.
I'll see you tomorrow

Good-bye.

Second to Sixth Day Descriptions for the Subjects in Condition B, Phase II

On _____ before we will work in the same way as we did yesterday. For the first five minutes you will review your old words. During the next ten minutes we will work on the new words. When the ten minutes are over you will mark your tally card and read in the word book. [Additional] instructions were given if the subjects were unable to recall the routine. Instructions were not given to the subjects who were able to follow the routine independently.]

APPENDIX B

Secondary Study Journal
Required only for noncollegiate Secondary Students

	Position	Daily Record - Exercises A										Daily Record - Exercises B										Total
		total										total										
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	
<u>one recording</u>																						
1		5	6	6	5	4	4	4				5	5	5	5	5	5					40
2		6	10	7	4	6	5					6	6	6	6	6	6					50
3		6	6	6	6	6	6	6				6	6	6	6	6	6					72
4		7	6	6	6	6	6	6				7	6	6	6	7	6					78
5		6	6	6	6	6	6	6	6			6	6	6	6	6	6	6				72
6		14	14	4	5	6	6	6				4	5	4	6	6	6					80
<u>two recordings</u>																						
7		6	6	6	6	6	6	6				6	6	6	6	6	6					60
8		14	6	6	6	6	6	6				13	6	6	6	6	6					80
9		7	6	6	6	6	6	6				6	6	6	6	6	6					72
10		6	7	6	6	6	6	6	6			6	6	7	6	12	6					80
11		7	6	6	6	6	6	6	6			7	6	6	7	6	6	6				84
12		15	14	10	6	6	6	6				15	7	7	7	6	6					102

**Procedures for the Annual
Inventory Survey of Federal Fisheries**

Stocks	Daily Harvest - Triennial A						Daily Harvest - Triennial B						Total
	1	2	3	4	5	6	1	2	3	4	5	6	
Inshore	3	7	9	9	9	9	9	9	7	9	9	9	39
	4	9	9	9	9	7	9	7	9	10	9		45
	9	9	7	9	9	10	10	9	10	9	12		63
	9	9	9	9	9	7	9	9	10	9	9	12	69
	7	9	9	9	9	10	7	10	10	12	12	12	83
10	9	9	9	7	9	9	9	9	7	9	9	7	63
Offshore	9	9	9	9	9	7	9	7	9	9	9	7	49
11	9	9	9	9	9	9	9	7	9	9	9	7	56
12	9	9	9	9	9	9	9	7	9	9	9	9	63
13	9	9	9	9	9	9	9	7	9	9	9	9	69
14	9	9	9	9	9	9	9	7	9	9	9	9	75

Appendix 1: Table 1: The Annual, Reported Daily In-plant and Through-the-Plant, Reported Discharge

Station	Daily Inflow - Treatment A						Daily Inflow - Treatment B					
	1	2	3	4	5	Total	1	2	3	4	5	Total
Bogues Creek	1	100	100	100	100	100	100	100	100	100	100	100
	2	100	100	100	100	100	100	100	100	100	100	100
	3	100	100	100	100	100	100	100	100	100	100	100
	4	100	100	100	100	100	100	100	100	100	100	100
	5	100	100	100	100	100	100	100	100	100	100	100
	6	100	100	100	100	100	100	100	100	100	100	100
Cape Fear	7	100	100	100	100	100	100	100	100	100	100	100
	8	100	100	100	100	100	100	100	100	100	100	100
	9	100	100	100	100	100	100	100	100	100	100	100
	10	100	100	100	100	100	100	100	100	100	100	100
	11	100	100	100	100	100	100	100	100	100	100	100
	12	100	100	100	100	100	100	100	100	100	100	100

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